

# Some Factors that Affecting the Performance of Mathematics Teachers in Junior High School in Medan

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## Abstract

Some Factor's That Affecting The Mathematic Teacher Performance For Junior High School In Medan. This research will examine the effect of direct and indirect of the Organizational Knowledge towards the achievement motivation, decision making, organizational commitment, the performance of mathematics teacher. The research method is a method of surveying the number of respondents as many as 102 teachers of mathematics taken by stratified proportional random sampling. The research found there is a direct influence of organizational knowledge on achievement motivation, decision making, organizational commitment and the performance of math teacher respectively 16.3%, 13.1%, 12.2% and 4.54%. Achievement motivation, decision making, and organizational commitment have directly effects on the performance of mathematics teacher. The magnitude of changes in performance that can directly determine organizational knowledge, achievement motivation, decision-making and organizational commitment respectively are 10.24%, 12.32%, 3.42% and 2.92%. To teachers of mathematics, in order to improve the understanding of the knowledge of the organization, increase achievement motivation through desire superior achievement and improvement of organizational commitment. For heads and school inspectors, need to improve clinical supervision and foster good communication increases the openness and good cooperation with teachers of mathematics, and for the head of the city education field, is expected to give a briefing and training for teachers, race through the efforts competitions drafting paper development learning mathematics.

**Keywords:** organizational knowledge, commitment, need for achievement motivation, decision making, mathematic teacher's performance

## 1. Introduction

The low quality of education in a nation reflects to the poor performance of teachers and poor management of education systems in the nation. The success of an organization is reflected in the performance of the Human Resources (HR) is involved in the organization. Therefore in order to improve the human resources that reliable and able to compete in the era of globalization and regional autonomy, need to consider matters relating to the performance of teachers in achieving educational goals.

The purpose of learning mathematics is to prepare the students to be able to face the changes in the world that is always evolving, through the practical of acting on the basis of logical thinking, rational, critical, care full, honest, efficient, and effective.

Furthermore, according to the National Council of Teachers of Mathematics (2009) that the purpose of learning mathematics is (1) learning to solving problem (2) study for the reasoning of proof (3) study for the ability to associate the idea of mathematics (4) learn to communicate mathematically (5) studying for the mathematical representation. Based on the quote's above, it can be concluded that the learning of mathematics is needed by all of the students.

Related to the learning of mathematics in which mathematics refers to the goal of learning mathematics in elementary and secondary schools are connected in Permendiknas 22 of 2006 (Sinaga, 2007), stating the student is able to:

- 1) Understanding the concepts of mathematics describes the relationship between concepts and apply the concept of flexible or logarithmic basis, accurate, efficient, and precise in troubleshooting.

- 2) Using the reasoning on the pattern and nature, perform mathematical manipulation in making generalizations, compile evidence or explain mathematical ideas and statements.
- 3) Problem solving that include the ability to understand the problem of designing a mathematical module, complete the model and interpret the obtained solution.
- 4) Communicate ideas with symbols, tables, diagrams, or the balance sheet to clarify the situation or issue.
- 5) Having respect to the usefulness of mathematics in life, namely curiosity, attention and interest in studying mathematics, as well as a tenacious attitude and confidence in problem solving that is an abstraction, logical, systematic, and full of symbols and formulas.

Teachers should have the competence to teach and be able to design learning process which are the responsibility of the advancement of learning outcomes. The improvement of the value in learning outcomes can't be separated from the role of teachers in transferring knowledge to the learners.

A teacher is said to be competent, skilled, and skill full in teaching, when he mastered pedagogical competence. Therefore in the framework of the certification of teachers, pedagogic competence is tested.

Based on Initial Competency Test (UKA) teachers in 2012, announced the Ministry of Education and Culture (Kemendikbud) held in February 2012, Mohammad Nuh said, after DIY, the top 10 provinces with the highest score, followed by DKI Jakarta (49.2), Bali (48.9), East Java (47.1), Central Java (45.2), West Java (44.0), Riau Islands (43.8), West Sumatra (42.7), Papua (41.1). As proclaimed, for the highest yields nation score is 97.0 and the lowest score is 1.0. Based on the calculation of the Ministry of Education and Culture (Kemendikbud), the results of the national average in 2012 were 42.25 covering all participants from kindergarten up to the level of junior high school (SMP). UKA distribution of 2012 showed a diverse picture of teacher competence (Waspada, 2012).

Based on the explanation of the Minister of Education can be seen that North Sumatra especially Medan is not one of the provinces with the average value of the highest UKA.

Bernardin (1993) defines of performance is defined as the record of out-comes prodused on a specified job function or activity during a specified time period. It means that performance is a notes of the results of the functional of a specified job or a specified activity during a period time.

In general, the performance can be interpreted as the work or performance. Wibowo (2007) stated that the performance has a broad meaning, not just states as a result of work, but how the work process takes place.

Armstrong (1998) states that the performance is the result of work that has a strong relationship with the organization's strategic objectives, customer satisfaction and contributes to the economy. Furthermore, Mangkunagara (2000) states the performance is the result of the quality and quantity of work achieved by an in carrying out their duties in accordance with the responsibilities given to him.

Hersey (1988) states that the performance is a logical effect of a person who is driven by basic categories of attribution. The first attribution is internal or dispositional, which is associated with the properties of that him/herself such as, capabilities and efforts. The second attribution is external or situational, which is connected with the environment such as the level of difficulty of the task, attitudes, and activity of the work, resources, economic conditions, and so on.

For a teacher, his/her performance is determined by the competency of teachers in performing their duties. His/her competence will support the performance in achieving its objectives and how it can be achieved.

The Indications of performing teachers would appear from the ability in terms of: (1) lesson plan, (2) organization, (3) the implementation / process of learning and (4) evaluating.

In this study, the performance of the mathematics teacher is the teacher's ability in formulating the objectives, the selection/organizing of the teaching material, the selection of learning resources, instructional media, the selection of models, strategies, approaches, methods and techniques of teaching, assessment of learning. As for seeing this performance, observation is used in this indicator that focus on attention in the beginning process of learning, manage learning activities, organizing time, learners and learning facilities, giving assessments and put an end to the learning process.

Bloom (1974) suggests that knowledge is described as the behavior of the test situations that emphasize keeping in something or through recognition or recall. While Suriasumantri (2002) said that knowledge is a product and part of a culture. This knowledge is developed by human resources through the process of learning about various aspects of life. In philosophical, this knowledge is what is known to all humans whether it is religion, belief, art,

morals, or science. The Criteria that differentiate knowledge from other knowledge or scientific disciplines from other disciplines is the basic of ontology, epistemology and axiology.

The View of modern organization theory by Cleland and King (1969), the organization is seen as a system. The system is described as an integrated assembly of the interaction between the elements that are designed to accomplish a function that is determined by means of cooperation (a system may be defined as an assembly of interacting integrated elements cooperatively designed to carry out a predetermined function). Based on the description above can be synthesized that theory of knowledge is knowledge of mathematics teacher organizations towards the basic principles of the Organization consisting of theory and practice of organization, understanding the organization, division of labor, the purpose of the organization, delegation of authority, work procedures, formalization, teamwork, preparation of job descriptions, organizational structure, span of control. The practice of organizational includes; technology application, coordinating resources, program planning, reward systems, inter-personal interaction, system analysis.

Warsanto (2002) explains that the motivation comes from the Latin, *move*re means move. There are three aspects of motivation that can be identified, namely: 1). The power that drives or causes a person to behave in certain activities, 2). The existence of a strong purpose, and 3). Morale is maintained at all times. It shows that a person who has power to be motivated to achieve goals and keep in applying to the task while Sasse (1981), suggested that the motivation is the desire for someone to do the work, he acts and challenged so he was willing to work hard. McClelland (2000) describes that the many needs of human beings, the most emphasized are: 1). Achievement, 2). Authority or Power, and 3). Cooperation.

The Affiliation need is the encouragement of a person to perform his duties so that he can get the attention of other people (co-workers, or people in their environment) either through cooperation or friendship. From several studies conducted by experts proved that the motivation of employees is related to performance.

The affiliation requirement is a part of the motivation in achievement. McClelland (1976) explains that people who have motivation in achievement is the people who set high goals but it can be achieved, more emphasis on rewarding individual achievements of (money), and having feedback from other people's attitudes.

Djaali (2008) concludes there are six characteristics of individuals who have motivation in his achievement, namely: 1). Love the task that demands personal responsibility for results and not on the basis of fate, or chance, 2). Choosing a realistic but challenging goals of the goals that are too easily accessible or too much risk, 3). Looking for a job description where he has feedback from the results of its work, 4). Can work individually and having a competition of himself, 5). Able to satisfy the desires for a better future, 6). Not easily just getting money, status, or other advantages. Based on the description above, the theory can be synthesized that Motivation in Achievement is the encouragement of inner mathematics teacher to perform an activity or task in order to achieve an excellence and a success or the resounding performance in the job. With the Indicators: the willing to have superior achievement, independence-oriented, work hard and having responsibilities to the job.

Kreitner (2003) explains that decision making is defined as a series of activities related to problem solving. There are three models for the decision making, namely; rational, optimizing and satisfying models. Rational model is done through five steps: identify problems and formulate troubleshooting purposes, to find alternative solutions, evaluate all alternatives, choosing an alternative solution, implementation and evaluation of alternative solutions. Optimization model is done by knowing the consequences of all the alternatives and choose the best alternative. Robbins (1991) states that the decision-making approach to satisfying approach where the decision-makers choose the best and satisfactory the alternative solution, whereas idealistic approach (idealizing), is to changed and solved the situation and the problem, so that this approach is rarely to be used.

Based on the description's theory above, it could be synthesized that the decision-making is a series of activities that related to the solving problem with the indication: to maximize the achievement of objectives, simplify consequences that may make the difficulties in choosing, gathering the facts, involving the subordinates in the decision making, finding the alternatives that is suitable to the objectives, selecting the type of activity that is suitable to be done, to maximize the best possible solutions, choosing the best alternative for the solution, assessing/evaluating the decisions.

According to Robbins (1991) stated that the commitment of the Organization is the orientation to the worker towards the organization in the form of loyalty to do the duty, the identification of the values and goals of the organization, and the involvement to the goals of the job. According to Bryson (1995), the commitment leads to the unity of the working team and improving the skill and performance.

A job may require the interaction of the group, which acts as a reinforcement for a worker who is needed to join

(Affiliation). Based on the statement, it is so clear that the commitment of the organization caused by the needs of autonomy to join.

Based on the description above, it could be synthesized that the organizational commitment is the ability of the mathematics teacher to commit and accept the existences of the school as his/her life by doing all the procedures which related to his/her responsibility of the job that she or he has in the school in which there is a willingness to work hard, have a sense of responsibility, loyalty, proudly and concern for the job.

## 2. Method of Research

Based on the research problem, objectives, background and the conceptual framework of the study, it can be said that the hypothesis model as seen in Figure 1 below:

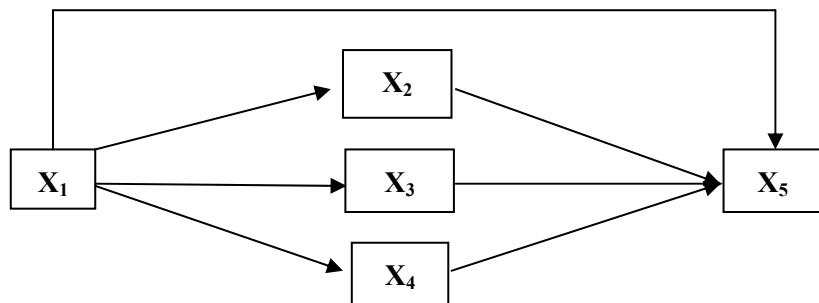


Figure 1. Hypothesis model of interpersonal variables approach

Explanation:

$X_1$  = organizational knowledge

$X_2$  = motivation achievement

$X_3$  = decision-making

$X_4$  = organizational commitment

$X_5$  = performance

Based on the theory above, it concluded that:

- 1) The organizational of knowledge is significantly effects on motivation achievement.
- 2) The organizational knowledge is significantly effects on the organizational commitment.
- 3) The organizational knowledge is significantly effects on the performance/skill of the mathematics teacher.
- 4) The motivation achievement is significantly effects on the performance/skill of the mathematics teacher.
- 5) The decision-making is significantly effects on the performance/skill of the mathematics teacher.
- 6) The organizational commitment is significantly effects on the skill/performance of the mathematics teacher.

This research was conducted in SMP Medan in April to July 2012. The populations of the sample in this study were all the mathematics teachers of junior high school in Medan, which consists of 348 mathematics teachers. The sample in this study consists of 102 people who use stratified proportional random sampling technique. Based on Cochran formula, it will be obtained proportions of public and private junior high school. This research was conducted through a survey method using questionnaires, pre-test and post-test, and observation as an instrument, meanwhile, to test the hypothesis used one way anava.

### 2.1 Analysis and Discussions

Based on the data analysis of this study, there are five variables are found, namely (1) Organizational Knowledge variables, (2) Achievement Motivation variables, (3) Organizational Commitment variables, (4) Decision-making variables, and (5) Performance mathematics teacher variables. The results of questionnaires, tests and observation sheet can be seen in Table 1 below:

Table 1. Description of data analysis towards the variables of the research

	X <sub>1</sub>	X <sub>2</sub>	X <sub>3</sub>	X <sub>4</sub>	X <sub>5</sub>
Sample (n)	102	102	102	102	102
Mean Total Scores	99.39	117.69	89.08	103.84	198.37
Mean on Scale 1-5	3.55	4.06	3.43	3.58	4.31
Levels of achievement	71%	81%	69%	72%	86%
Standard of deviation	8.53	9.83	9.11	8.03	14.48
Minimum scores	81	90	72	83	158
Maximum scores	117	135	110	121	223

Explanation:

X<sub>1</sub>: organizational knowledge,  
 X<sub>2</sub>: motivation achievement,  
 X<sub>3</sub>: decision-making,  
 X<sub>4</sub>: organizational commitment,  
 X<sub>5</sub>: performance of mathematics teacher

In accordance to the theoretical model in this experiment, there are seven hypothesis tested by Path Analysis. Diagrammatically, the path diagram describes the structure of the causal relationship between exogenous variables with endogenous variables created as a paradigm of research as shown in Figure 1.

By using the tools of computer program applications obtained a summary of the results of correlation analysis and path analysis between the exogenous variables as endogenous variables in Table 2 below.

Table 2. The results of the correlation and path analysis between exogenous and endogenous variables and the significance

Number of Hypothesis	Coefficient of correlation	Significance	Coefficient of Path analysis	T <sub>test</sub>	Significance	Explanation
1	r <sub>12</sub> = 0.404	0.000	p <sub>21</sub> = 0.404	4.422	0.000	Significant
2	r <sub>13</sub> = 0.362	0.000	p <sub>31</sub> = 0.362	3.884	0.000	Significant
3	r <sub>14</sub> = 0.349	0.000	p <sub>41</sub> = 0.349	3.724	0.000	Significant
4	r <sub>15</sub> = 0.481	0.001	p <sub>51</sub> = 0.213	2.362	0.020	Significant
5	r <sub>25</sub> = 0.557	0.000	p <sub>52</sub> = 0.3151	3.966	0.000	Significant
6	r <sub>35</sub> = 0.392	0.006	p <sub>53</sub> = 0.185	2.176	0.032	Significant
7	r <sub>45</sub> = 0.372	0.003	p <sub>54</sub> = 0.171	2.028	0.045	Significant

\* All of the coefficients of path analysis have t-test bigger than t-table 5%, is 1.66. So that, all of the path analysis are significantly affect the variables.

So, based on the analysis of the research above, the diagram of the path analysis shows that the structural of the causal relationship between exogenous variables with endogenous variables as in Figure 2 below:

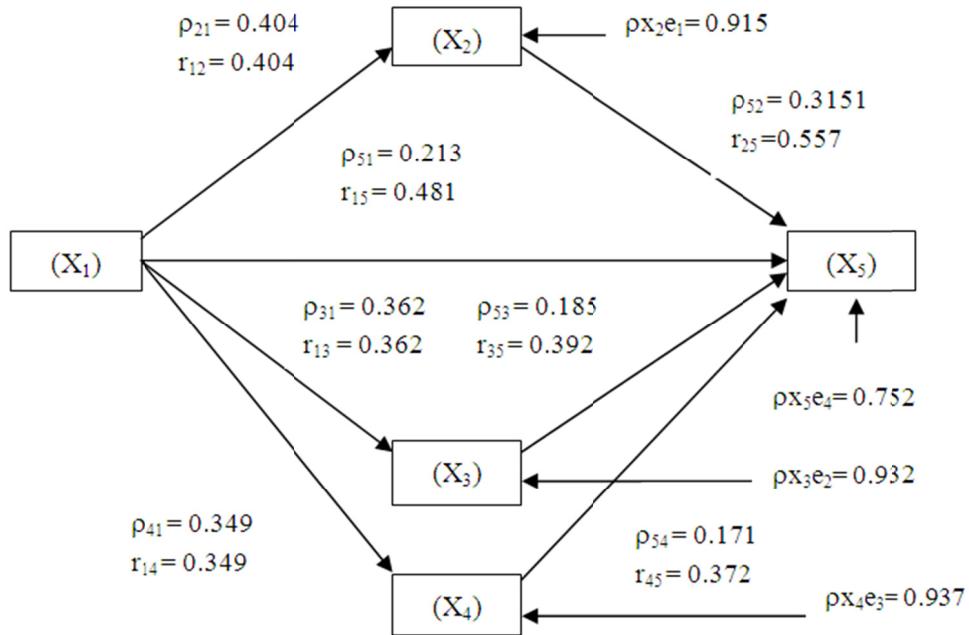


Figure 2. Diagram path analysis

Explanation:

$X_1$  = Organizational Knowledge

$X_2$  = Motivation Achievement

$X_3$  = Decision-making  $e_2, e_3, e_4$  and  $e_5$  = residues variable

$X_4$  = Organizational Commitment

$X_5$  = Performance

Based on the result of data analysis, it can be seen that the organizational knowledge ( $X_1$ ) is significantly effects on the motivation achievement ( $X_2$ ), the decision-making ( $X_3$ ), and the organizational commitment ( $X_4$ ) as seen in Table 3.

Table 3. The table of direct impact proportional on organizational knowledge ( $X_1$ ) for achievement motivation ( $X_2$ ), decision-making ( $X_3$ ), and organizational commitment ( $X_4$ )

Variables	The Direct Impact Proportional Towards		
	Achievement Motivation ( $X_2$ )	Decision Making ( $X_3$ )	Organizational Commitment ( $X_4$ )
Organizational Knowledge ( $X_1$ )	0.163	0.131	0.122

Based on Table 3 above it can be seen that the direct effect of Organizational Knowledge ( $X_1$ ) on Achievement Motivation ( $X_2$ ) of 0.163.

In the same way organizational knowledge gained directly influence on decision making at 0.131. As for the organizational knowledge variable on the organizational commitment is equal to 0.122.

So the organizational knowledge ( $X_1$ ) directly affect changes in achievement motivation ( $X_2$ ), decision making ( $X_3$ ) and organizational commitment ( $X_4$ ), respectively amounted to 16.3%, 13.1% and 12.2%.

Furthermore, the calculations of the effects of direct and indirect of the Organizational Knowledge ( $X_1$ ), Achievement Motivation ( $X_2$ ), Decision ( $X_3$ ), and Organizational Commitment ( $X_4$ ) against Performance ( $X_5$ ) as shown in Table 4 below.

Table 4. The table of the effects of direct and indirect of the organizational knowledge ( $X_1$ ), achievement motivation ( $X_2$ ), decision-making ( $X_3$ ), and the organizational commitment ( $X_4$ ) to the performance ( $X_5$ )

Variable	Effects				Total of Effects	Non-anava	
	Direct effect to $X_5$	Indirect effect to $X_5$ by:				S	U
		$X_1$	$X_2$	$X_3$	$X_4$		
$X_1$	0.0454		0.030	0.014	0,013	0.1024	-
$X_2$	0.1232					0.1232	0,030 0,042
$X_3$	0.0342					0.0342	0,014 0,024
$X_4$	0.0292					0.0292	0,013 0,022
Jumlah						0.2890	0.057 0.088

Explanation: S = Components of Spurious; and U = Components of Un-analyzed.

Based on the table 4 above, it can be seen that there is a direct effect on the Organizational Knowledge ( $X_1$ ) to the Performance ( $X_5$ ) is about 0,054. The Indirect effect of the Organizational Knowledge ( $X_1$ ) to the Performance ( $X_5$ ) by the Achievement Motivation ( $X_2$ ) is about 0,030. The Indirect effect of the Organizational Knowledge to the Performance ( $X_5$ ) by the Decision-making ( $X_3$ ) is about 0.014.

The Indirect effect of the Organizational Knowledge ( $X_1$ ) to the Performance ( $X_5$ ) by the Organizational Commitment ( $X_4$ ) is about 0.013. So, the total score of the direct and indirect effect of the Organizational Knowledge towards the Performance ( $X_5$ ) is about 0.1024. Thus, the power of direct and indirect of the Organizational Knowledge ( $X_1$ ) affects on the changes in the Performance( $X_5$ ) about 10.24%.

In the same way, the effects of the direct/indirect of  $X_2$ ,  $X_3$ , and  $X_4$  variables can be seen in the table above.

Based on the findings of this study, it can be concluded that:

The performance of mathematics teacher in Medan is enough, because there are 43 people or 42.15% are in this category. While those who are in the category of less enough, there are 45 people or 44.11% and in low category there are 13 people or 12.75%. As for the high category just 15 persons or 14.70%.

The Organizational Knowledge of the mathematics teacher which include as the high category is about 46 persons (45.09%) and 19 persons (18.63%). While the category of low is about 20 persons (19.61%). The results above shows that the mathematics teacher still needs to be improved in understanding of the organization, understanding of the tasks given in teaching mathematics start on planning stage, implementation and evaluation stage to the success of the learning process.

The results of this study also shows that the distribution scores of Achievement Motivation category is only 18 persons (17.63%) are on the average class, while there are 45 persons (44.12%) are low from the average class. This Achievement motivation approach still needs to be improved through the motivation of Principals, Supervisors and the Head of the Education Department. The Results of this study supports the statement of Grifin (2004, p. 38) which states that a person's performance is determined three things: motivation, ability and environment. Then the results of this study supports the theory of Mathis and Jackson (1997) and the theory of Colquit, Lepine, and Wesson (2009, p. 6) which states that performance is directly and indirectly influenced by the organizational mechanism, the mechanism of the team, and the individual characteristics.

The findings of this study shows that there are 52 persons (50.98%) above the average, while 16 persons (15.69%) are under the average category. These results show that the understanding of the mathematics teacher to decision making still low, while the task of a mathematics teacher always make good decisions in the learning process involves the material aspects of mathematics as well as aspects of the learning process. Because of the mathematics teacher is a leader in the classroom, the main point duty of the leaders is to make a decision. This findings support the statement/theory of: Mondy (1993, p. 344) states that the effective leadership should involve the team in the decision making. It means that leaders who are always involve the team in making a decision will be more effective for the performance. Baron (1991; p. 475), said the main point of a leader is to make a decision. Furthermore, the results of this study support the research of Ayu (2003, p. 45) and Wahidil (2007, p. 34) in which both studies concluded that it is significantly affect in decision-making process on the performance.

The Results of this research on the organizational commitment of mathematics teachers tend to be less, although there are still 60 persons (58.82%) are above the average grade and 11 persons (10.78%) are in the low grade.

The organizational commitment of the mathematics teacher in junior high school in Medan needs to be improved, because the organizational commitment is the ability to do something with the agreement. For example, if there is a teacher forbids the students to wear T-shirts to school, but by some teachers allow it, it will cause chaos. Therefore, the mathematics teacher is a teacher who always committed to the mathematical concepts should have committed in showing the task. This finding supports the theory/statement of Jackson (1997, p. 95), Lewis (1989, p. 56), Hoy (1991, p. 186) states that organizational commitment will directly affect the performance.

To increase the fifth variable, the closest person who is responsible for increasing the performance or skill of the mathematics teacher is a headmaster of the school, supervisors, and the head of Education Department especially Medan.

### 3. Conclusion

Based on the data analysis above, so the effects of exogenous and endogenous variables conclude that:

- 1) The Organizational Knowledge is significantly effects on Achievement Motivation of the mathematics teacher in Medan,
- 2) The Organizational Knowledge is significantly effects on making a decision of mathematics teacher in Medan,
- 3) The Organizational Knowledge is significantly effects on the Organizational Commitment of mathematics teacher in Medan, and
- 4) The Organizational Knowledge is significantly effects on the Performance of the mathematics teacher in Medan. Meanwhile at the second part,
- 5) The Achievement Motivation is significantly effects on the performance of mathematics teacher in Medan.
- 6) The Decision-Making is also significantly effects on the Performance of mathematics teacher in Medan.
- 7) The Organizational Commitment is significantly effects on the Performance of mathematics teacher in Medan.

Based on the findings above, it can be concluded that the higher of organizational knowledge so the achievement motivation, decision making, organizational commitment and performance of mathematics teacher of junior high school is also higher in Medan, respectively was 16.3%, 13.1%, 12.2% and 4.54%. Furthermore, the higher of the achievement motivation, decision making, organizational commitment will make higher to the performance of the mathematics teacher, respectively was 10.24%, 12.32%, 3.42% and 2.92%.

The Seventh conclusion of this study is a sub structure that forms a theoretical model for mathematics teacher's performance based on theory and empirical data support.

### 4. Recommendation

The recommendation that is suitable based on the research findings are:

#### 4.1 Mathematics Teacher

In accordance with the progress of science and technology, to improve the performance of mathematics teacher in junior high school effectively and efficiently there are some things that they do, they are:

- 1) Improving the understanding of organizational knowledge and its applications, so that schools can be seen as an organization effectively and efficiently.
- 2) Improving the achievement motivation as well as the willingness and the responsibility for the task.
- 3) Improving the effectiveness of decision-making by collecting data for decision making and maximize the best solution.
- 4) Improving the organizational commitment by increasing the willingness to work hard, loyalty to the work and concern for the job.

#### 4.2 Headmaster and Supervisor of the School

In relation to the various factors that affect performance, that has been found above, so the headmaster and the supervisor of the school need to pay attention to the strengths and weaknesses in organizational knowledge, achievement motivation, decision making and commitment to the organization, in providing input to improve these variables, principals and supervisors can conduct clinical supervision to build familiarity, establish good communication, increase transparency and good cooperation with the mathematics teacher in order to improve the quality of education.

#### 4.3 The Head of Education's Department

The Head of Education's Department of Medan is very concerned to improve the quality of education through the improvement of mathematics teacher's performance in Medan. In relation to this, there are some efforts that could improve the performance of mathematics teacher, that is:

- 1) Giving a practical training to the headmaster-mathematics teacher on basic knowledge of the organization, especially in the topic of the analysis system, coordinate resources, program planning, system of rewards and personal interactions.
- 2) Giving a practical training about the achievement motivation, through the preparation of proposals on improving the quality of schools, as well as the provision of an adequate reward.
- 3) Doing a comparative study on the schools that have been successful in improving the quality of school, both inside and outside of the country.
- 4) Supporting and encouraging the mathematics teachers in the promotion.
- 5) Involving the mathematics teacher actively in any activities that support the implementation of their duties and functions.
- 6) Giving a reward in the form of praise or certificate, as well as additional incentives for mathematics teachers who carry out their duties and responsibilities very well.

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